

Unit 8

Day 2

Completing the Square

Example 6

Find the value of c that completes the square:

$$x^2 + 8x + c$$

$$c = 16$$

$$b = 2 \cdot \sqrt{a} \cdot \sqrt{c}$$

$$8 = 2 \cdot 1 \cdot \sqrt{c}$$

$$4 = \sqrt{c}$$

$$16 = c$$

Example 7

Find the value of c that completes the square:

$$x^2 - 4x + c$$

$$c = 4$$

Example 8

Find the value of c that completes the square:

$$x^2 + \frac{1}{3}x + c$$

$$c = \left(\frac{1}{6}\right)^2$$

$$c = \frac{1}{36}$$

$$x^2 + \frac{1}{3}x + \frac{1}{36}$$

$$\left(x + \frac{1}{6}\right)^2$$

$$x^2 + \frac{1}{6}x + \frac{1}{6}x + \frac{1}{36}$$

$$x^2 + \frac{1}{3}x + \frac{1}{36}$$

Example 9

Find the value of c that completes the square:

$$x^2 + \frac{1}{2}x + c$$

Goal is to create a perfect square trinomial that has a lead coefficient of 1.

1) $x^2 + 10x + 17 = 0$

$$x^2 + 10x^{x^c} = -17^{x^c}$$

$$x^2 + 10x + 25 = -17 + 25$$

$$x^2 + 10 + c$$

$$c = 25$$

$$(x + 5)^2 = 8$$

$$x + 5 = \pm \sqrt{8}$$

$$x = -5 \pm \sqrt{8} = -5 \pm 2\sqrt{2}$$

2) $3a^2 + 12a + 2 = -16$

$$3) \quad n^2 - 9n + 15 = 8$$

$$4) \quad 2y^2 - 3y + 8 = 0$$

HOMEWORK

Unit 8 Day 2

p. 118: 17-22 (all)

	(2) Volume of total solution	% Strength of Pot. Per.	Volume of Pot. Per. (L)
Sol 1 15%	X	.15	.15X
Sol 2 30%	3	.30	.30(3)
Final Sol	3+X	.20	$\frac{.20(3+X)}{.15X + .30(3)}$

Let x = Liters of 15% Solution to be added to 30% Sol

$$.20(3+X) = .15X + .30(3)$$

$$X = 6$$

The chemist should add 6L of